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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

MACK, RICKY LEVERN

ART UNIT

PAPER NUMBER

2873

DATE MAILED: 07/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/915,455

Applicant(s)

YAMAZAKI, SHOICHI

Examiner

Ricky L Mack

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 May 2003.
- 2a) ☐ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-28 is/are allowed.
- 6) ☒ Claim(s) 1-5 and 30-33 is/are rejected.
- 7) ☒ Claim(s) 6 and 29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: *Detailed Action*.

DETAILED ACTION***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance or after an Office action under *Ex Parte Quayle*, 25 USPQ 74, 453 O.G. 213 (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 5/2/03 has been entered.

Amendment Status

2. Acknowledgment is made of entry of Amendment D, filed 5/2/03.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is

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determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. Claims 1-5 and 31-33 are rejected under 35 U.S.C. 102(e) as being anticipated by Inoguchi et al.(6480337 B2).

Regarding claims 1 and 31, Inoguchi discloses a reflective display means (fig. 6, ref. # 2), illumination light source means for illuminating the display means (fig. 6, ref. # 14-15, 41), an illumination optical system for guiding light from the illumination light source means to the display means (fig. 6, ref. # L3), and a display optical system for guiding light from the display means to an eye of an observer (fig. 6, ref. # L2), wherein the illumination optical system and the display optical system share only one surface of optical surface A having two functions of transmission and reflection with each other (fig. 6, ref. # L3 and upper side of L2), wherein a reference ray emitted from the illumination light source means and passing a center of an image on the display means and a center of the eye is incident from the illumination light source means to the optical surface A (fig. 6, ref. # 41, L3, 2 and 12), is reflected under a condition of an angle $\alpha(o)$ of $20 < \alpha < 70$ between the entering reference ray and the reflected reference ray on the optical surface A (fig. 8, ref. # L1 a & reflected beam), is incident substantially normally to the display means (fig. 8, ref. # 2), is reflected thereby (fig. 8, ref. # 2), is transmitted through the optical surface A (fig. 8, ref. # L1 a), is reflected by a plurality of decentered, reflective curvature surfaces, and thereafter is guided to the eye (fig. 8, ref. # L2), and wherein the display optical system is comprised of an optical member comprising the optical surface A (fig. 8, ref. # L1a) and another optical member having an optical refracting power, said optical members being placed with an air space in between (fig. 8, ref. # L2).

Regarding claims 2 and 32, Inoguchi discloses the optical surface A in the illumination optical system is a reflective curvature surface having a positive refracting power on a local meridional section (a plane including incident light and exit light of the reference ray) (fig. 6, ref. # 31).

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Regarding claim 3 and 33, Inoguchi discloses the illumination light source means is an RGB time division light source and the display means displays images of R, G, and B in time

Regarding claim 4, Inoguchi discloses an angle $\beta(o)$ of incidence to the reflective display means, of the reference ray emitted from the illumination light source means satisfies the following condition: $-10 < \beta < 10$ (fig. 8, ref. # 2).

Regarding claim 5, Inoguchi discloses the display optical system includes two or more surfaces with refracting powers differing depending upon azimuth angles, and the entire display optical system has a positive refracting power (fig. 8, ref. # L2).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inoguchi et al. (6480337 B2) in view of being well known in the art.

Inoguchi discloses, as in claim 30, an optical member (see fig. 10) comprising two optical elements (L12 and L13) which are joined together (col. 18, lines 17-19). Inoguchi does not disclose that the lenses are joined together by cement. The examiner take official notice that it is well known in the art to join lenses together by cement. It would have been obvious to one of ordinary skill in the art at the time the invention was made to join together the lenses disclosed by Inoguchi with cement for purpose maintaining placement of joined lenses.

Allowable Subject Matter

7. Claims 6 and 29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. Claims 7-28 are allowable.

9. The following is an examiner's statement of reasons for allowability: The prior art taken either singularly or in combination fails to anticipate or fairly suggest the limitations of the independent claim(s), in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper. The prior art fails to teach a combination of all the claimed features as presented in claim(s) 7-28, wherein the claimed invention comprises an optical surface A having two functions of transmission and reflection, shared between an illumination optical system and a display optical system, has a curvature on a local meridional section, where $local_fy$ represents a focal length in the local meridional section of the display optical system and $local_fyA$ a focal length in the local meridional section of only the optical surface A in the following condition:

$0.1 < local_fyA / local_fy < 1.0$ (claim 7), when $local_ryA$ represents a radius of curvature in a local meridional section, at a point of intersection with the reference ray on a optical surface A of a lens body in a, display optical system and $local_ryB$ a radius of curvature in the local meridional section, at a point of intersection with the reference ray on a curved surface B, $local_ryA$ and $local_ryB$ have an identical sign and satisfy the following condition:

$0.4 < local_ryA / local_ryB < 2.0$ (claim 13), an illumination optical system and a display optical system share an optical curvature surface A having two functions of transmission and reflection with each other, a curved surface B is provided on the opposite side of the optical curvature surface A to a display means, and the optical curvature surface A and the curved surface B compose a lens body, when an F3 eye center ray represents a ray passing the center of the eye and an outermost

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image height F3 on the far side from the eye and when an F2 eye center ray represents a ray passing the center of the eye and an outermost image height F2 on the near side to the eye, an optical path length of the F3 eye center ray in the lens body in the display optical system is longer than that of the F2 eye center ray (claim 21), as claimed.


Regarding claims 6 and 29, the prior art does not disclose an F3 eye center ray represents a ray passing the center of the eye and an outermost image on the far side from the eye, $local_fy(F3)$ is a total focal length in the local meridional section of the display optical system on the F3 eye center ray, $local_fyC(F3)$ is a focal length in the local meridional section on a hit point of the F3 eye center ray on a transmissive surface C with a refracting power closest to the eye, and a ratio of the focal lengths satisfies the following condition: $-0.6 < local_fy(F3) / local_fyC(F3) < -0.1$.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ricky L Mack whose telephone number is (703) 305-6984. The examiner can normally be reached on Monday-Friday (6:30 AM to 4:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y. Epps can be reached on (703) 308-4883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

RM
July 11, 2003


RICKY MACK
PRIMARY EXAMINER